

Wolff Law Offices, PLLC
Response and Amendment

Patent Application
Attorney Docket No.: STT-PAUS0001

REMARKS

Applicant submits herewith a letter and excess claim fee in the amount of \$25.00 for one additional total claim beyond the 43 total claims previously paid for.

Applicant submits herewith a Petition and fee in the amount of \$60.00, for a one-month extension of time pursuant to 37 CFR § 1.136.

Applicant thanks the Examiner for acknowledging and initialing the citations to the references listed by the Applicant on form PTO-1449.

Applicant thanks the Examiner for noting that the drawings filed on March 19, 2004 are accepted.

Claims 1 - 43 were pending and were examined. By this amendment, Applicant has cancelled claims 15-17 (three cancelled claims), added new claims 44-47 (four new claims), and amended claims 1 - 3, 6, 7, 12, 14, 18, 20, 25, 29 -31, 38, 42, and 43, to more clearly claim the invention of the subject application. Therefore, Applicant respectfully request examination of presently pending claims 1-12 and 14-47.

In Item 1, the Examiner rejected claims 1-10, 13-27, 30-39, and 42-43 under 35 U.S.C. 102(b) as being anticipated by Hershtig (U.S. Patent Number 6,212,404). This rejection is respectfully traversed. Applicant has cancelled claims 15-17 without prejudice or disclaimer. Applicant has amended claims 1-3, 6, 7, 12, 14, 18, 25, 29 - 31, 38, 42 and 43, to more clearly claim the invention. Further, Applicant has added new claims 44-47 to more completely claim the invention. Applicant respectfully submits that claims 1-10, 13-27, 30-39, and 42-43 and new claims 44-47 are not anticipated by Hershtig and are patentable over Hershtig for at least the following reasons. Applicant respectfully requests reconsideration.

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The present invention is directed generally to systems and methods for cost effective receiver or transceiver that is easy and cost effective to upgrade. Referring first to Figure 2A, one feature of the present invention is directed towards a front end 103 having a first set of components 200 that includes a housing 204 that is used to house a dual duplexer 201, an amplifier module 202, and a power supply module 208. The power supply module 208 may include a power supply 203 and a panel 205. (See the present invention specification at, for example, paragraph 23.) Having the front end 103 constructed in this manner enables easy and cost effective upgrading to, for example, a higher performance front end receiver by removing, for example, the power supply module 208 and the amplifier module 202.

Now referring to Figure 3, an upgraded front end 103 with a second set of components 300 is assembled into the same housing, 204. In this case, the second set of components 300 are at least in part different from the first set of components 200, and may include a dual duplexer 201, a housing 204, and a cryo-cooled system module 308. The cryo-cooled system module 308 may include, for example, a cryogenic cooler 303, a heat sink 304, a control board 305, and a second module mounting panel 306. The system may also include a cry-cooled HTS filter 302 and/or an LNA 301. (See the present invention specification at, for example, paragraph 23.) "As shown by comparing Figure 2 and Figure 3, an upgraded front end 103 may be achieved in this case by removing the amplifier module 202 and power supply module 208 and replacing them with the cryo-cooled system module 308, while utilizing the housing 204 and dual-duplexer from the initial front end system 103 with first set of components 200. This

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makes for a system that has an easy and cost effective upgrade.” (Present specification at paragraph 35 (page 9, lines 21-25).)

Referring again to Figure 2A and Figure 4, another feature of the present invention is directed towards, in various embodiments, upgrading from a front end that does not include a high temperature superconductor (HTS) filter (see, e.g., Figures 2A and 2B), to an upgraded front end that does include an (HTS) filter (see, e.g., Figures 3 and 4). In the case when an HTS filter is included, the cryo-cooling must necessarily be at a low enough temperature that is equal to or below the maximum upper temperature limit for high temperature superconductors.

Hershtig is directed to providing an alternative wireless system that is converted to include cryo-cooled parts that are cryo-cooled to a temperature that is not as cold as those needed for high temperature superconductor (HTS) devices and does not include HTS devices. Further, Hershtig does not use the same housing for housing front end components before and after the conversion.

Hershtig does not teach or suggest a system or method of providing a front end (receiver of transceiver) that uses the same housing or a single housing for housing that is included in (or houses) a first set of components before upgrade and a second set of components that are used for upgrading. To the contrary, the only mention of a housing is with reference to Fig. 21 that states that it is “an exemplary embodiment of the cryogenic refrigeration unit 8 where the heat exchange unit 22 is protected by an outer insulating housing 40.” (See Hershtig at col. 12, lines 44-46.) Hershtig fails to disclose, teach or suggest anything about the particular housing or housings that may have been used prior to retrofitting the system to include non-HTS cry-cooled components. Further,

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there is no mention or suggestion in Hershtig of using the same housing for before and after retrofitting for cryo-cooled components. In fact, the statement that the housing is an "insulated housing 40" suggests that the housing 40 is particularly designed to maintain the cold temperatures for the cryo-cooled parts, not conventional parts, and thus housing 40 was not part of the pre-retrofitted system. Typical front end housings without cryo-cooling will tend to be designed to dissipate heat of the internal components rather than being an "insulated housing."

Further, Hershtig does not teach or suggest including high temperature superconductor (HTS) devices in a front end receiver or transceiver. In fact, Hershtig teaches away from including HTS devices in a front end receiver or transceiver. The Hershtig invention does not use HTS devices. Hershtig states at col. 2, lines 32 – 37, that "as defined in the present patent specification, cryogenic temperatures are those temperatures above the maximum upper limit of current high temperature superconductors." Further, Hershtig at col. 10, lines 8 – 26 teaches that the cryo-cooling unit that they use is not sufficient to achieve the temperatures necessary to support HTS devices. Hershtig states that "the cryogenic refrigeration unit according to the present invention may produce cooling temperatures above the upper practical limit of current HTS technologies, In general, depending on the particular cryogenic refrigeration unit 8, it is desirable to produce temperatures less than 175 degrees Kelvin and above HTS temperatures. Unlike the HTS temperature ranges (e.g., 77 K), cryogenic temperatures, as defined by the present specification, are easily achievable using low-cost and highly reliable refrigeration equipment. (Hershtig at col. 10, lines 12 – 24.) (See also Hershtig at, for example, col. 11, lines 3 – 5 and col. 13, lines 14 – 32) Finally,

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Hershtig at col. 14, lines 35 – 61, provides a comparison of their invention with other architecture, including HTS architectures, and referring to their invention states: “Since this module avoid superconductivity,” (Hershtig at col. 14, lines 41-42.) Therefore, it is clear that Hershtig does not teach or suggest using HTS devices, but in fact teaches away from using HTS devices.

Regarding independent claims 1, 18, 31, and 42, Hershtig fails to teach or suggest using the same housing or a single housing for housing front end components before and after upgrade. None of the embodiments of Hershtig teach or suggest using a single or the same housing for a front end, both before and after upgrading the components that make up the front end. Figs. 1 – 2 of Hershtig show cell towers with various components, but do not specifically show any housing. Figs. 3 – 18 of Hershtig are all block diagrams of the systems and do not disclose any housing for the various functional component arrangements, and do not show any housing. Fig. 19 of Hershtig shows a chart for cryo-cooling temperatures, and does not show any housing. Fig. 20 of Hershtig shows various components included with a cooling unit, but does not show a housing for housing the components. Fig. 21 of Hershtig shows an exemplary embodiment of the cryogenic refrigeration unit 8 where the heat exchanger unit 22 is protected by an outer insulating housing 40. As noted above, the statement that the housing is an “insulated housing 40” suggests that the housing 40 is particularly designed to maintain the cold temperatures for the cryo-cooled parts, not conventional parts, and thus housing 40 was not part of the pre-retrofitted system. There simply is no disclosure, suggestion, or motivation provide in Hershtig for using the same housing or a single housing for the original equipment in a front end that is re-used to then accommodate the upgrade components. Therefore,

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independent claims 1, 18, 31, and 42 are patentable over Hershtig, for at least the reason that Hershtig fails to teach or suggest using the same housing or a single housing for housing front end components before and after upgrade as stated in the amended claims.

With respect to dependent claims 2 – 14, 19 – 30, 32 – 41, and 43, these claims are dependent either directly or indirectly on one of independent claims 1, 18, 31, and 42, and are therefore patentable over Hershtig for at least the reasons given with respect to claims 1, 18, 31, and 42. Various ones of dependent claims 2 – 14, 19 – 30, 32 – 41, and 43, are also patentable over Hershtig for the following reasons.

With respect to claim 2, Hershtig also does not disclose, teach or suggest having the second set of components mounted to the housing and includes at least one other component of the first set of components. In Hershtig, there is no indication of re-using components from the original system that are kept in their original housing. Hershtig shows a separate and/or new housing when the system is to be retrofitted with cryo-cooling. Therefore, claim 2 is further patentable over Hershtig for at least this additional reason.

With respect to claims 3, 12, 25, 29, and 38, Hershtig also does not disclose, teach or suggest having components that are cooled to a temperature equal to or below the maximum upper limit for high temperature superconductors. In fact, as clearly shown above, Hershtig specifically teaches away from cooling to such low temperature as required for HTS devices. Therefore, claims 3, 12, 25, 29, and 38, are further patentable over Hershtig for at least this additional reason.

With respect to claim 6, Hershtig also does not disclose, teach or suggest having a second set of components that includes a cryogenic cooler, a heat sink, and a control

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board. Hershtig fails to discuss a control board being included in a second set of components at all. Therefore, claim 6 is further patentable over Hershtig for at least this additional reason.

With respect to claims 7 – 9, 12, 25, 26, 29, 37, and 38, Hershtig also does not disclose, teach or suggest including high temperature superconductor (HTS) devices. In fact, as clearly shown above, Hershtig specifically teaches away from including HTS devices. Therefore, claims 7 – 9, 12, 25, 26, 29, 37, and 38, are further patentable over Hershtig for at least this additional reason.

With respect to claims 14, 30 and 31, the Examiner stated in the Office Action that “it is inherent that the housing for the receiver front end having three dimension of sufficient size to accommodate at least a portion of the first set of components and the second set of components (sufficient to house a cryogenically cooled component “LNA”). (Emphasis added.) While it may be inherent that the system of Hershtig has a housing of sufficient size to house the first set of components and a housing of sufficient size to house the second set of components, it does not follow that the housing used to house the first set of components is the same housing used to house the second set of components. In fact, as pointed out above, Hershtig fails to disclose, teach or suggest anything about the housing or housings that may have been used prior to retrofitting the system to include non-HTS cry-cooled components. The only housing disclosed by Hershtig is housing 40 which is an “insulating housing” needed to make sure that the non-HTS cry-cooled components stay cold. There is certainly nothing inherent in Hershtig about using the same or a single housing for the front end both before and after the upgrade. So it follows, of course, that there is nothing in Hershtig that teaches or suggests that the

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housing include "additional volume" because there is no teaching or suggestion of using the same housing for pre and post retrofitting to the cryo-cooling system. Therefore, claims 14, 30, and 31 are further patentable over Hershtig for at least this additional reason.

Based on the aforementioned, Applicant respectfully submits that claims 1-10, 13-27, 30-39, and 42-43 are patentable over Hershtig because Hershtig does not disclose, teach or suggest (nor is it inherent) each and every element of claims 1-10, 13-27, 30-39, and 42-43 as amended herein. There is no showing of using the same housing or a single housing, nor is this inherent. Further, Hershtig teaches away from using the same or a single housing. Finally, Hershtig teaches away from using temperatures necessary for HTS devices or including HTS devices.

In Item 2, the Examiner rejected claims 11-12, 28-29, and 40-41 under 35 U.S.C. 103(a) as being anticipated by Hershtig (U.S. Patent Number 6,212,404). This rejection is respectfully traversed. As previously noted, Applicant has amended claim 12, to more clearly claim the invention. Applicant respectfully submits that claims 11-12, 28-29, and 40-41 are not rendered obvious by Hershtig and are patentable over Hershtig for at least the following reasons. Applicant respectfully requests reconsideration.

With respect to claims 11-12 and 28-29, the Examiner appears to take Official Notice that the invention of Hershtig may be altered to include a dual duplexer. The Examiner stated that "it would have been obvious and well within the level of a person of ordinary skill in the art at the time the invention was made to incorporate a duplexer" Applicant respectfully objects to the use of Official Notice. The examiner may not rely on official notice at the exact point where patentable novelty is argued, but must come

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forward with pertinent prior art that teaches or suggests the claimed invention.

Allegations by the Examiner that certain differences between the claimed subject matter and the cited prior art would have been obvious do not create a presumption of unpatentability. The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggests the desirability of the modification. Therefore, the Applicant respectfully requests that the Examiner identify another reference that teaches or suggests a reason for modifying Hershtig to include a dual duplexer as defined by claims 11-12 and 28-29.

With respect to claims 40-41, the Examiner again takes Official Notice that the invention of Hershtig may be altered to include the particular dimensions for the housing as described in the present patent application and claims 40 and 41. The Examiner suggests that the dimensions are a matter of design choice. Applicant respectfully objects to this use of Official Notice. As stated above, there is no disclosure or suggestion in Hershtig that a housing may be increased in size, or any reason to, since Hershtig does not disclose using the same housing before and after an upgrade. The examiner may not rely on official notice at the exact point where patentable novelty is argued, but must come forward with pertinent prior art that teaches or suggests the claimed invention.

Allegations by the Examiner that certain differences between the claimed subject matter and the cited prior art would have been obvious do not create a presumption of unpatentability. The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggests the desirability of the modification. Therefore, the Applicant respectfully requests the Examiner to identify another reference that teaches or suggests a reason for modifying

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Hershtig to include a larger housing having the size or dimensions as defined by claims 40 and 41.

Further, Applicant has added new claims 44-47 to more completely claim the invention. Claims 44-46 are patentable over Hershtig because Hershtig fails to disclose, teach or suggest an enlarged housing for housing all of the other modules and having an excess area of sufficient size to house all upgrade components, a duplexer module, an amplifier module including a non-cryocooled low noise amplifier, and a power supply module. Nor does Hershtig disclose removing and adding the particular components recited in claim 45 or including an HTS filter as recited in claim 46. Claim 47 is patentable over Hershtig for reason of its dependency on claim 1 and Hershtig does not disclose, teach or suggest a housing that includes two or more other housings integrated into a single housing. Based on these points, new claims 44-47 are also patentable over Hershtig.

Based on at least the aforementioned reasons, Applicants believe that all claims 1-14 and 18 - 47 are patentable over Hershtig.

Applicants respectfully submit that claims 1-14 and 18 - 47, all the claims now pending in the present application, are patentable over the cited and applied reference(s). Therefore, Applicant respectfully request that claims 1-14 and 18 - 47 be allowed and the present application be passed to issue at the earliest possible time.


Applicant hereby petitions for any extension of time which may be required to maintain the pendency of this case, and any required fee, except for the Issue Fee, for such extension is to be charged to the charge card identified in the credit card form provided with the filing of the application.

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If for any reason the Examiner believes that the present application is not now in condition for allowance, the Examiner is requested to contact the undersigned at the telephone number listed below, or on my mobile telephone at 703-731-7220, to initially discuss any issues that might be of concern and, if needed, schedule an interview if the application can not be put into condition for allowance by a telephonic interview.

Respectfully submitted,


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